MARINE REVIEW.

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Great Consumption of Ore.

STOCKS ON LAKE ERIE DOCKS 700,000 TONS LESS THAN THEY WERE A YEAR AGO—CONSUMPTION FROM LAKE ERIE PORTS DURING THE YEAR IS CLOSE TO NINE MILLIONS—NO REFERENCE TO SOUTH CHICAGO IN THESE FIGURES.

Stocks of iron ore on all Lake Erie docks on May 1 were 693,282 tons less than on the same date a year ago. This information, which has been obtained through direct reports to the MARINE REVIEW from all of the dock superintendents, will be welcomed by everybody connected with the ore and vessel interests of the lakes. On May 1 the amount of ore on all Lake Erie docks, exclusive of cargoes received this season, was 1,949,698 gross tons, against 2,642,980 tons on May 1, 1895, and 2,588,370 tons on May 1, 1894. This aggregate is made up very largely of non-Bessemer ores, and it includes also, as in past years, a large amount of low-grade ore, (some of it practically worthless), that has been accumulating for a great number of years past.

It is also learned from this dock statement that 8,805,510 tons of ore was moved from Lake Erie ports to furnaces during the year ending May 1, 1895, and that this amount is 2,509,295 tons more than was ever moved from docks to furnaces in any previous year.

At the close of navigation on Dec. 1, 1895, the stocks on dock amounted to 4,415,712 tons. If we deduct from this 1,949,698 tons, the amount now on dock, we find that shipments to furnaces from Lake Erie ports during the past winter amounted to 2,466,014 tons, which added to 6,339,496 tons, the amount shipped to furnaces during the season of navigation in 1895, gives 8,805,510 tons as the entire consumption of ore from Lake Erie docks during the year ending May 1, 1896. During the year ending May 1, 1895, the consumption from Lake Erie docks was 6,296,215 tons, so that the difference in favor of the year just past is 2,509,295 tons. These figures do not, of course, represent the entire consumption of Lake Superior ores during the year ending May 1, 1896. They cover only the ore brought to Lake Erie ports and have no reference to the heavy consumption at South Chicago or to small quantities consumed at other points on Lake Michigan and at Detroit. The following tables give full details of stocks and shipments to furnaces during a number of years past:

IRON ORE ON LAKE ERIE DOCKS—GROSS TONS.

PORTS.	Opening of Navigation.			Close of Navigation.		
	May 1, 1896.	May 1, 1895.	May 1, 1894.	Dec. 1, 1895.	Dec. 1, 1894.	Dec. 1, 1893.
Toledo	10,593	32,625	44,500	113,332	96,157	92,911
Sandusky	8,442	67,542	65,772	34,375	77,004	78,439
Huron	55,173	80,864	56,791	101,00	147,632	89,000
Lorain	118,820	185,306	170,391	224,264	223,733	201,632
Cleveland	506,693	718,753	821,923	1,200,792	1,441,785	1,163,930
Fairport	346,847	371,730	311,494	605,470	660,980	578,033
Ashtabula	636,254	787,566	762,139	1,301,302	1,439,119	1,296,431
Conneaut	112,406	128,823	68,485	292,460	199,365	91,337
Erie	137,826	212,643	222,094	335,718	454,233	359,827
Buffalo	16,614	57,128	64,781	207,199	94,239	119,170
Total	1,949,698	2,642,980	2,588,370	4,415,712	4,834,247	4,070,710

The following table shows amounts of ore on dock May 1, during ten years past.

Year.	Gross Tons.	Year.	Gross Tons.
1887	149,304	1892	1,537 188
1888	703,720	1893	2,095,797
1889	588 753	1894	2,588,370
1890	936,228	1895	2,642,890
1891	2,662,223	1896	1,949,698

IRON ORE SHIPMENTS, LAKE ERIE PORTS TO FURNACES, FULL YEARS.

Year ending—	Gross Tons.	Year ending—	Gross Tons.
May 1, 1896	8,805,510	May 1, 1893	6,102,125
May 1, 1895	6,296,215	May 1, 1892	5,802,496
May 1, 1894	4,870,488	May 1, 1891	5,148,669

IRON ORE SHIPMENTS, LAKE ERIE PORTS TO FURNACES DURING WINTER PERIOD DEC. 1, TO MAY 1.

Winter of—	Gross Tons.	Winter of—	Gross Tons.
1895-1996	2,466,014	1892-93	2,053,654
1894-95	2,191,267	1891-92	1,971,301
1893-94	1,512,340	1890-91	1,231,264

Lake Freight Matters.

Vessel owners who have placed their ships in the ore trade at $1.05 for the season have reason to ponder over the figures showing stocks of ore on dock and the consumption of ore during the past year. Without any reference to the heavy consumption of ore at South Chicago, it is shown that during the year ending with the first of the present month nearly 9,000,000 tons of ore was taken to furnaces from Lake Erie docks, and that the stocks now on dock are 700,000 tons less than they were a year ago. This means that the amount of ore consumed in the year just closed has beed considerably in excess of the great 10,000,000-ton output of the Lake Superior region in 1895.

The $1.05 season rate on ore has proven attractive enough to permit of ore dealers covering, thus far, practically all ore for which they have found sale. This rate, as well as the 70-cent Escanaba contract rate, will furnish a fair profit for even vessels of moderate size, and most owners who have accepted these figures say they can not afford to pass an opportunity of certain profit.

But the number of owners who have made no contracts as yet is larger than usual, and another feature of the situation is the absence of speculation. J. C. Gilchrist and M. A. Bradley, the two largest individual owners of vessel property in Cleveland, are said to have taken no ore as yet. Mr. Gilchrist is cretited with a statement to the effect that the earnings of his vessels last year would have been full $50,000 greater than they were if he had not been bound by contracts. In the month of October alone the difference in earnings of his fleet would have been, it is said, not less than $20,000. These are items suficient to cause one man a great deal of deliberation, silent and otherwise, over the question of contracts or trip-to-trip charters.

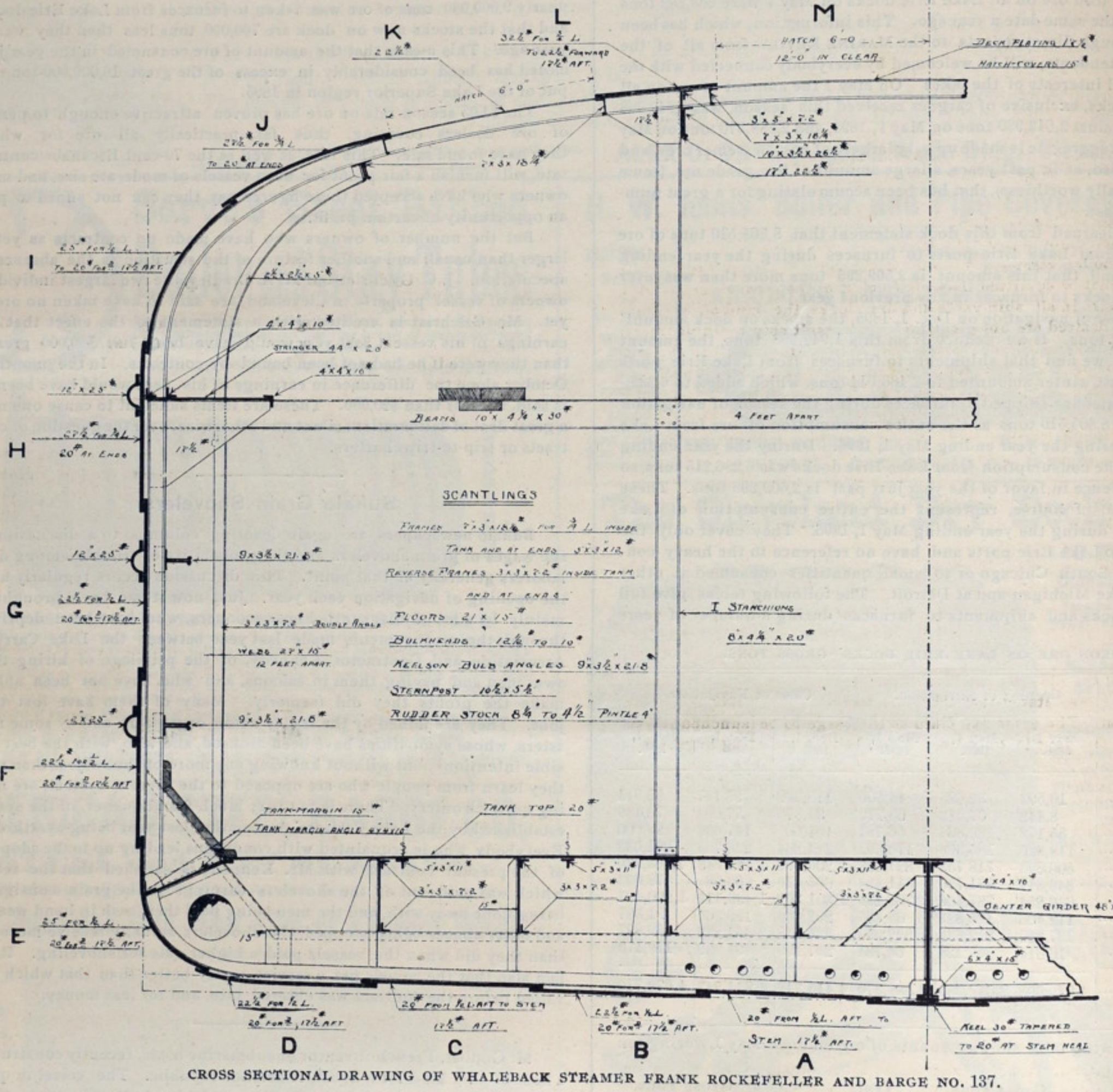
Buffalo Grain Shovelers.

Buffalo newspapers are again devoting columns to a discussion of the wages of grain shovelers and the probability of trouble among dock laborers generally at that point. This discussion occurs regularly upon the opening of navigation each year. Just now it has been brought on mainly by a lot of disgruntled boss scoopers, who have been deprived, through the arrangements made last year between the Lake Carriers' Association and Contractor Kennedy, of the privilege of hiring their own men and paying them in saloons, and who have not been able to make the profits they did formerly. Many of them have lost their jobs. They are joined by the trades union organizers and by some ministers, whose sympathies have been aroused, and who, with the best possible intentions, but without knowing any more of the subject than what they learn from people who are opposed to the present system, are making quite an outcry. There is not very much fear, however, of the system established by the Lake Carriers' Association last year being overthrown. Everybody who is acquainted with conditions leading up to the adoption of the present contract with Mr. Kennedy is satisfied that the rebate which was paid out of the shovelers earnings to the grain consignees being done away with, and the men being paid their cash in hand weekly, and other abuses being stopped, the shovelers actually receive more pay than they did when the vessels paid a higher rate for shoveling. It is a fact also that the vessels get a service vastly better than that which prevailed before the contract was entered into, and for less money.

M. Goubet, French inventor of submarine boats, recently constructed a boat of that kind for a South American republic. The vessel in question is 27 feet long by 5.8 feet in diameter. Its hull consists of three gun-metal castings, viz., conical stem and stern pieces and a middle ring. The shell is 1 inch thick in the middle and ⅜ inch at the ends. Access to the interior is gained through an oval manhole in the central belt. The torpedoes with which the boat is armed are carried outside the shell, and can be released at will, the same action starting their propellers into motion. The propeller of the boat is mounted on a shaft fitted with a universal joint, and steering is effected by suitably moving the propeller. Underneath the hull a weight of 1½ tons of lead is fitted, which can be released in case of emergency, thus increasing the buoyancy of the vessel very materially. The screw is operated by an electric motor of about 2 horse power, which will give, it is stated, a speed of 7 or 8 knots. Oars are also provided, so that when necessary the boat can be maneuvred by hand. These oars are of special construction, in order to fit them for use entirely under water. The crew consists of an officer and two men. An "optic tube" fitted with reflectors extends to the surface, thus enabling the boat to be guided in the desired course.

The Frank Rockefeller and Consort.

Capt. Alex. McDougall, inventor of the whalebacks and general manager of the American Steel Barge Co's. works at West Superior, is of the opinion that the whaleback steamer Frank Rockefeller and her consort, No. 137, are among the strongest and best constructed vessels ever turned out of a lake ship yard. A cross sectional drawing giving sizes and weights of material in these two vessels is presented herewith. The one drawing serves for both ships. They are to be the property of the barge company. The steamer was launched several days ago and the barge is now about ready for launching. The steamer is 380 by 45 by 26 feet and the barge is 360 by 45 by 26 feet. The steamer has triple expansion engines, with cylinders of 23, 38 and 63 inches diameter by 40 inches stroke, and three Scotch boilers 12 feet in diameter and 13 feet long. Each of the boilers has three 38-inch furnaces and the working steam pressure is 175 pounds.



CROSS SECTIONAL DRAWING OF WHALEBACK STEAMER FRANK ROCKEFELLER AND BARGE NO. 137.

Taxation of Vessels in Minnesota.

All ships of the Rockefeller fleet are to hail from Duluth. Although the management of these vessels does not admit that this action is taken on account of a tax law in Minnesota that is favorable to ships, it is quite certain that the question of taxation had a great deal to do with the matter of listing these vessels at Duluth, while the management is in Cleveland. A Minnesota law approved April 2, 1895, makes the taxes of vessels in that state only 3 cents per net registered ton. By this law big steel steamers, that are of great value on account of their costly machinery and their ability to move large quantities of freight very rapidly, have a decided advantage over steamers of moderate value and especially over sail vessels and tow barges. The tonnage of the big steamer that is valued at $200,000 or $250,000 is in some cases scarcely more than double that of a low grade lumber barge that would not be worth more than $20,000 or $25,000. This is the objection to the tonnage system of taxation. In nearly all cases it favors the valuable steamer as against the poor man's vessel. But the Minnesota law is, nevertheless, more acceptable to all vessel owners than the laws of some other lake states, on account of the low rate of 3 cents a ton. A copy of the act was recently received from a Duluth vessel owner. It is designated "chapter No. 248, general law of Minnesota, 1895," and stripped of the usual legal introduction is as follows:

"Sec. 1. That in consideration of an annual payment into the state treasury by the owner of any steam vessel, barge, boat or other water craft, owned within this state, or hailing from any part thereof, and employed in the navigation of international waters, of a sum equal to 3 cents per net ton of the registered tonnage thereof, such payment shall be received in lieu of all taxes and said steam vessel, barge, boat or other water craft shall be and the same is hereby made exempt from all further taxation, either state or municipal, upon the payment of the sum herein provided.

"Sec. 2. The owner of any steam vessel, barge, boat or other water craft, hailing from any port of this state, and employed in the navigation of international waters, desiring to comply with the terms of this act, shall annually on or before the first day of July file with the state auditor a verified statement in writing containing the name, port of hail, tonnage, and name of owner of such steam vessel, barge, boat or other water craft, and shall thereupon pay into the state treasury a sum equal to 3 cents per net ton of the registered tonnage of said vessel, and the treasurer shall thereupon issue his receipt therefor.

"Sec. 3. The state treasurer shall annually, on or before the first day of December, pay into the county treasury of any county wherein is located the port of hail of any steam vessel, barge or other water craft complying with this act one-half of all money so received from any vessel or water craft whose port of hail is within said county."

Ship Yard Matters.

As a result of the improvements made in the Lake Superior Iron Co's steamers Andaste and Choctaw, during the past winter, the value of each in the May supplement to the Inland Lloyd's Register is increased from $90,000 to $100,000. Insurance agents receiving copies of the May supplement to the register are asked to note two typographical errors. The class of the tug Niagara should be A1½ instead of A1, while that of the barge Sweetheart should be A2 instead of A2½. New steel steamers in the May supplement are: City of Bangor, Eddy Bros., Bay City, $220,000, A1; Coralia, Mutual Transportation Co., Cleveland, $265,000, A1; W. D. Rees, Wilson Transit Co., Cleveland, $200,000, A1; L. C. Waldo, Roby Transportation Co., Detroit, $225,000, A1. The rebuilt Goodrich steamer Iowa (formerly Menominee) is valued at $80,000 and rated A1½*.

It is now planned to have the new passenger steamer City of Buffalo turned over from her builders, the Detroit Dry Dock Co., to officials of the Cleveland & Buffalo line, on Monday next. On the following day, Tuesday, the 12th, the vessel will be brought to Cleveland, arriving in the afternoon. She will leave for Buffalo late Tuesday night, with a party of prominent citizens from Cleveland aboard. On Wednesday the vessel will be presented with her colors in Buffalo, during a trip into the lake with Buffalo business men and city officials aboard. On the vessel's return to Cleveland, Thursday, the chamber of commerce will be given an excursion and the vessel will for several hours be open to public inspection.

It would seem that profitable freights now prevailing in all branches of lake commerce would prompt Capt. James Davidson to hurry work on the several wooden vessels now under construction in his West Bay City yard, but it must be admitted that, on account of the great extent of new work and repairs in all ship yards and dry docks, the kind of workmen that are most desired are not plentiful. As a result ship building operations are retarded and all new vessels will be later in going into commission than was expected. This condition is helpful to the freight situation at the present time. Only one of the new Davidson ships, the Armenia, has as yet been launched. She did not leave the ways until Saturday last, but was so nearly completed that she is already in commission.

The Montreal Transportation Co's schooner Melrose was launched, a few days ago, at Kingston. The Melrose is undoubtedly the strongest vessel ever built in Canada for lake service. She is 180 feet between perpendiculars, 36 feet beam and 14 feet 3 inches depth of hold. Frames and planking are of white oak, and keelsons, stanchions, clamps, deck beams and hatch combings of steel. The deck and spars are of British Columbia pine. The vessel has a steam capstan windlass, furnished by the American Ship Windlass Co., as well as steam pumps, and her outfit includes every appliance of modern kind that is found on the best lake vessels.

In a few of the first impressions of the last issue of the REVIEW leaving the press it was stated that there are forty-five vessels of the whaleback type afloat. The error was plain as the barge to be launched at West Superior in a few days is only No. 137, and the numbering began with 101. Only three vessels were built away from the lakes,—two on the Atlantic coast and one on the Pacific—so that the number of whalebacks has not as yet quite reached forty. But this is, nevertheless, a great record, as it seems only a few years since the barge 101 was viewed with great curiosity in every port that she entered on the lakes.

"It would certainly be fitting," says Mr. M. A. Bradley, "to name one of the new Rockefeller ships for Capt. Alex. McDougall, especially as the names are planned to honor men connected with progress in ship building and the iron industry. As the inventor of the whaleback type of ship, Capt. McDougall is entitled to distinction, and his connection with Rockefeller interests would seem to be a special reason why one of the ships should be named for him." There are a great many vessel owners on the lakes who agree with Mr. Bradley in this opinion.

Tonnage and official numbers of new lake vessels reported from the bureau of navigation, treasury department are: Steam—City of Bangor, Port Huron, Mich., 3,690.90 tons gross, 2,976.38 net, No. 127,131; T. T. Morford, Chicago, 109.17 gross, 63,88 net, No. 145,717; James T. Martin, Port Huron, Mich., 47.83 gross, 32.53 net, No. 77,216. Sail—Armenia, Port Huron, Mich., 2,040.76 gross, 1,919.78 net, No. 107,219; Bertie, Detroit, 43.95 gross, 35.77 net, No. 107,219.

A large number of invitations have been sent out for the launch of the Sir Henry Bessemer, first of the Rockefeller ships, at the ship yard of the Globe Iron Works Co., Cleveland, Saturday afternon, and it is quite probable that the attendance will be much larger than usual. This steamer was fully described and illustrated in the last issue of the REVIEW.

James T. Martin is the name selected for the new Thompson line tug of Port Huron.

Mr. Gregory Hurson of Milwaukee paid $20,000 for the steamer F. & P. M. No. 1 and will expend about $8,000 in improving her.

New Cargo Records.

The first cargo of the Mutual line steamer Coralia is a fair indication of what may be expected from steel steamers of the Rockefeller kind now nearing completion in lake ship yards. The Coralia has just delivered at Ashtabula from Escanaba a cargo of 4,301 gross or 4,817 net tons of ore, on an average draft of 15 feet 4 inches. The steamer was drawing 15 feet 1 inch forward and 15 feet 7 inches aft when she left Escanaba, and in addition to this large cargo had on board also 130 net tons of fuel. This is by great odds the largest cargo of any kind ever carried through the connecting waters between Lakes Huron and Erie, although it will be noted by the record printed below that the steamer S. S. Curry, a much smaller boat, carried a larger cargo from Escanaba to South Chicago, where there was practically no limit in draft for a ship like the Curry. But on an Escanaba-South Chicago trip the Coralia would undoubtedly carry 500 tons more than the Curry. As the Coralia will be engaged all season in the ore trade between Escanaba and Ashtabula, she will undoubtedly be the banner ship of the lakes for 1896, and with increased draft at Ballard's reef and in the vicinity of Amherstburg, Detroit river, where dredging is now under way, she will go on making new records.

This steamer is 432 feet over all. The two Rockefeller ships building at the Globe yard, Cleveland, are exact duplicates of her, as regards dimensions, and they are to be the same also in nearly all other respects. But they will trade to Lake Superior, and their draft will be limited to about 14 feet until the new canal lock at Sault Ste. Marie is completed next spring. Estimates regarding the capacity of the Coralia on 15 feet 6 inches were nearly 200 net tons below the actual weight of her first cargo, and her owners and builders are accordingly very much pleased. Cargo and speed records of lake freight ships, revised to date, are as follows:

Iron ore—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,569 gross or 5,117 net tons, Escanaba to South Chicago; Coralia, Mutual Transportation Co. of Cleveland, 4,301 gross or 4,817 net tons, Escanaba to Ashtabula on draft of 15 feet 4 inches. Lake Superior cargoes—Schooner Aurania, John Corrigan of Cleveland, 3,928 gross or 4,399 net tons, Duluth to Ashtabula on 14 feet 4 inches draft.

Grain—Selwyn Eddy, Eddy Transportation Co. of Bay City, 130,820 bushels of wheat, Detroit to Buffalo; steel schooner Martha, Minnesota Steamship Co, 163,000 bushels of corn, South Chicago to Erie on 15 feet 4 inches; S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 246,673 bushels of oats, Chicago to Buffalo.

Coal—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,535 net tons bituminous, Conneaut to Gladstone; Selwyn Eddy, Eddy Bros. of Bay City, Mich., 4,252 net tons anthracite, Buffalo to Milwaukee.

Speed—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 45 hours and 16 minutes, 16.4 miles an hour; Centurion, Hopkins Steamship Co. of St. Clair, Mich., Buffalo to Duluth, 997 miles, 67 hours and 50 minutes, 14.7 miles an hour.

Changes in Aids to Navigation.

President Brown and Secretary Keep of the Lake Carriers' Association will endeavor to have the underwriters pay a portion of the expense of maintaining private lights during the present season. The underwriters directed Capt. F. B. Hackett of Amherstburg to locate and mark the wreck near Colchester, Lake Erie, on which the schooner Teutonic struck a few days ago. Capt. Hackett, who had a diver make an examination, says the wreck is certainly that of the schooner Adams, which was sunk last fall. A float with two bright lights will be maintained over the spot. The wreck is about two miles west of Grecian shoal on Colchester point, a little to the north of the regular passage. From bearings taken last fall when the vessel sank, it would seem that the ice has moved the wreck about six miles up the lake.

A notice from the Canadian government announces that a bell has been attached to the platform of the range light tower near the outer end of the east pier at Port Dalhousie, Lake Ontario, and will be rung by hand, as a fog signal, in reply to fog signals from vessels desiring to make the canal.

Under the direction of the Canadian government, Capt. Andrew Hackett of Amherstburg has placed seven red spar buoys on the east bank of the new 20-foot channel at Bar point.

Some trials with nickel steel as a material for screw propellers have recently been made on behalf of the German naval authorities. Two small boats, fitted in the one case with propellers of ordinary steel, while the alloy was used in the other, were employed in similar service. At the end of three months the common steel propeller was found to be badly corroded, while the nickel steel one was still in good condition. Less satisfactory results were obtained on another trial. These experiments have no relation, of course, to large wheels, but serious difficulty has been encountered with propellers or torpedo boats, in which the thin blades corrode very quickly.

Aliens on Lake Ships.

President Brown and Secretary Keep of the Lake Carriers' Association are now in Washington looking after several matters of legislation in which lake vessel owners are partcularly interested. They will give special attention to certain bills that have been before the house committee on immigration, and which as originally drawn met with strong objection from vessel interests in different parts of the country, as severe penalties were provided in them for vessel owners hiring an alien in any capacity aboard their ships. These objectionable provisions have in part been eliminated from these bills in committee, and it is not now thought that there is great danger of any legislation of this kind being seriously considered in the present congress. In fact it is understood that Congresman Mahany of New York, who introduced one of these bills, has given full consideration to the peculiar conditions attending the employment of sailors, deckhands, firemen, etc., on lake vessels, and will not urge the passage of any unreasonable measure. Mr. Goulder, counsel of the Lake Carriers' Association, has given considerable attention to the question of legislation bearing upon the citizenship of lakefaring men, and his views, expressed in a long letter to Congressman Beach of Ohio, are interesting. His letter to Mr. Beach has reference to the bills in question. He says:

"Seamen on the seaboard, as well as ours up here, are very largely foreigners. They are wanderers on the face of the earth and may hardly be said to acquire domiciles anywhere that they go. Upon a strict construction it might be said that the legal residence and legal domicile of a whole lot of Scandinavian sailors is in Norway and Sweden, whereas they leave home and sail for years in English and American ships, on the lakes and on the western rivers more or less in the winter season; and they, together with English, Irish, German and some other foreigners, with a comparatively small number of Americans, constitute the body of seamen in English and American ships. It is impossible for any one to know much about their antecedents or their comings and goings. Wherever there is a short trade with quick trips and such frequent changes of men as there is on the lakes, it would very seriously hamper and impede to have such restrictions as are provided in the Corliss bill.

"The policy of the government is and should be to foster American shipping, and especially the carrying of American goods in American bottoms. Whether this shall be done by subsidy, by a bonus for mile service or tonnage services performed, by free ships, by free materials for ships or by any of the numerous plans in that direction which have been evolved, it is certainly most desirable that encouragement be given wherever it properly can be, and that no law be passed which will tend to hamper, impede and distress the employment of American ships on lakes and elsewhere. From the simple standpoint of humanity, and upon the principle of giving the common right to men engaged in a business which involves the peculiarities of the lake trade, the men who follow the avocation in the ordinary way ought not to be hampered.

"I have nothing to say against the main point of bills of the kind introduced by Mr. Corliss. I only urge and argue that men and their employers should not be required to pursue their unlawful calling other than in that way which, from its convenience, if not its necessities, has become the common and ordinary and usual method. When the workmen in factories, in stores, on farms, or in shops ordinarily may choose a residence contiguous to the scene of their labors in the same political jurisdiction, generally they do so. That is the common course. Men with fixed businesses may, and ordinarily do, know something of the men they employ. There is no exigency about starting a big factory which requires the instant employment of a number of men essential to its operation, while a great ship, involving an investment of two or three hundred thousand dollars, which must earn several hundred dollars every day, in order to keep up expenses and deterioration, can not lie idle without great loss and can not move without the men necessary to man her. How cruel an interference with the fair and reasonable rights of the owner and the seamen is that which requires, under heavy penalties, that the usual order and the necessary method of doing that business should be revolutionized, depriving a man from following his business as it has been followed for hundreds of years, and compelling the owner, however enterprising and public spirited a man he may be, to tie up his property while certain technical requirements, unusual and heretofore unheard of, must be observed in regard to the men employed. When you consider that it would effect more than $60,000,000 invested in the vessels alone of the lakes, and even more than this in other American waters, to say nothing of the embarrassment it would be to a business involving in its ramifications hundreds and hundreds of millions of dollars, it does not seem possible that anything could induce the congress or any of its committees to pass such legislation, and when their attention is properly called to it I do not believe it will be done.

"There is another view to take of this whole matter. Any such bill as this should be addressed to and should operate upon the internal affairs of a nation. We unquestionably have a right to say who shall come to this country and under what terms, according to our wisdom; so we have a right to say that people working within our country shall be incorporated into and form a part of our community for all purposes. But here on the lakes the water highway is the division line for hundreds of miles between two nations using these waterways in common. The lake system is considered to terminate at Montreal, from which point to Duluth, for some 1,400 miles, lake vessels navigate indiscriminately in the American and Canadian waters. An immense traffic is carried on between the two countries in vessels of both countries. It is probable that more American than Canadian vessels use Canada's Welland canal upon the same terms. We use their St. Lawrence system of canals. With our new lock at the Sault incomplete and the old one overtaxed, with vessels lying sometimes twenty-four hours awaiting a turn to lock through, we hailed as a great relief the opening of the Canadian lock at the Sault last fall, which our vessels used thereafter indiscriminately on the same terms as Canadian vessels. We can not make any ordinary voyage, except in the trade confined to Lake Michigan, without going into Canadian waters. The great work known as the "cut" at the Lime Kiln crossing, an improved channel 2,500 feet wide and 440 in length, is in Canadian waters. Other improvements are partly on the Canadian side. We have United States light-ships for the accommodation of our own commerce anchored in Canadian waters. The Canadian government has recently, at the request of the Lake Carriers' Association, furnished gas buoys in Canadian waters at Pelee point, head of Lake Erie, which our government will keep in operation. The Lake Carriers' Association has provided lights, which it pays for, on the Canadian side. In the Sault river, the Canadian government co-operated with ours in setting out ranges and range lights wherever those were necessary on the Canadian side, to carry out the the plan of the United States light-house board. I mention these things for the purpose of showing the intimate relations of the two countries growing out of the necessity of the case in reference to lake navigation of which more than 90 per cent., probably 95 per cent., is carried on in American bottoms.

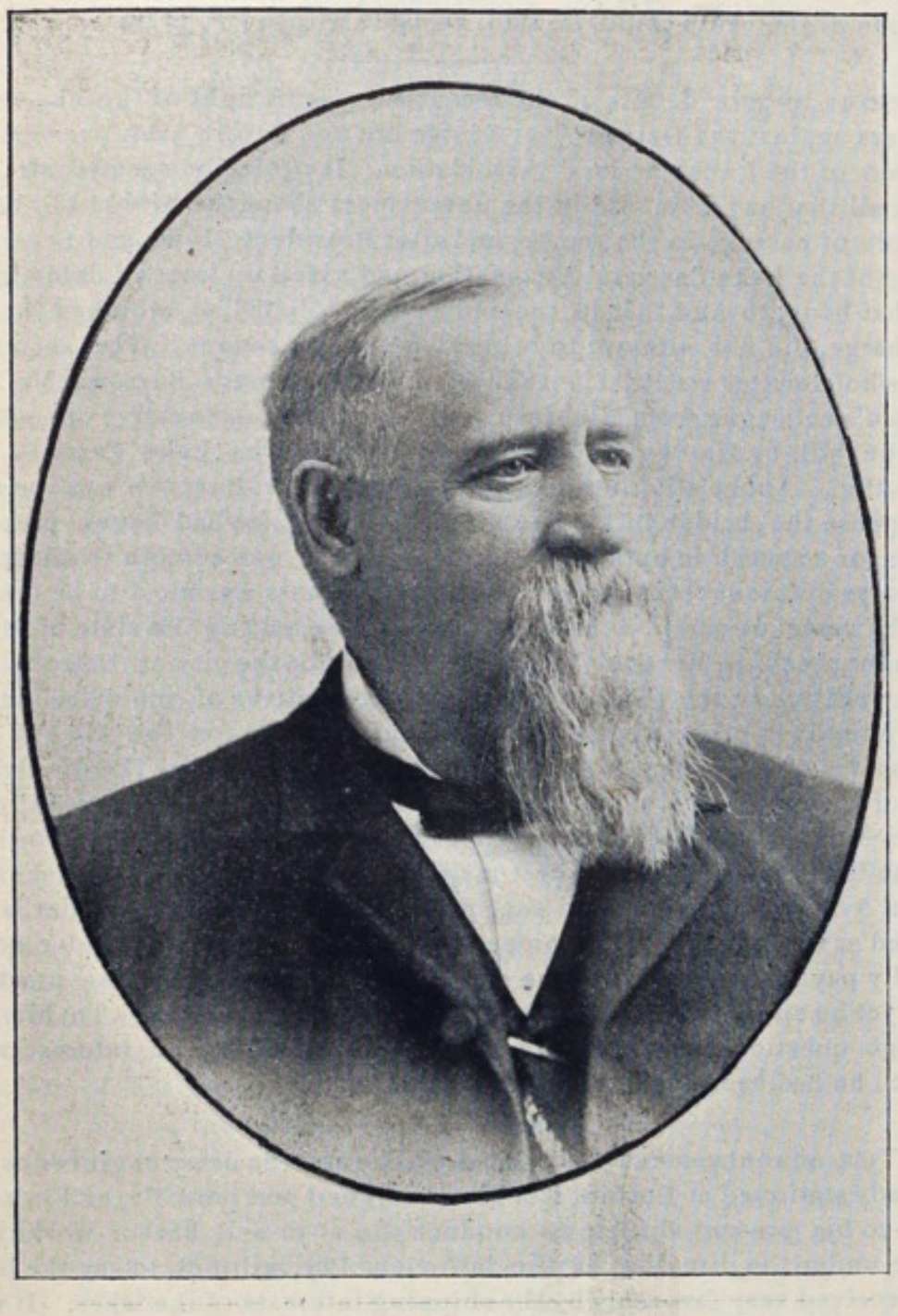
"Such a regulation as that to which I refer, no matter how meritorious or even essential in its general provisions, would, when applied to seamen and owners of lake vessels, reach out in nearly every instance beyond the confines of our own country and seek to regulate or interfere with matters outside. We could not then complain if retaliatory legislation were passed in the other country. It is not necessary to stand in fear, but we have had some experience in retaliatory measures in connection with lake shipping which has been mutually unpleasant. We once passed a law forbidding the employment of Canadian steamers, tugs and wrecking appliances in United States waters. They passed a law of similar character prohibiting the employment of American tugs and appliances in Canadian waters, which proved a source of much annoyance and loss to American vessels and underwriters. Under that law, even when the consort of a steamer got aground in the rivers on the Canadian side, where they were compelled to go for passage, the steamer would have to lie idly by until a Canadian tug could be notified and brought to the scene of disaster. While we bitterly complained of this condition of things, our vessels being so much more numerous than theirs, and the regulations therefore nearly always pinching us, no one could reasonably complain of any injustice in the Canadian law, and when complaint was made by our masters, the reply was: "Our law is practically identical with your own." When discriminations (as we regarded them) were made against American bottoms using the Welland canal in respect to tolls, as related to trans-shipment below, we complained very bitterly of the injustice, and established discriminating tolls at the St. Mary's Falls canal, where the Canadians had not yet the lock on their side. This was one of the most unpleasant episodes we have ever had in our lake experience, but happily, it was of short duration, the matter being amicably adjusted.

"Such things are to be deprecated. While, as I said before, we need not fear to do this or many other things, it is wise in establishing regulations, the general importance, intent and operation of which will be most properly upon the purely internal commerce of our country, to include, or rather not to exclude, a feature of this sort affecting matters of so essentially different character from those intended to be governed by the regulations."

In a letter to the REVIEW, Lieut. J. B. Cavanaugh, corps of engineers U. S. A., says: "In mentioning the fact that the Canadian government has established buoys along the eastern edge of the channel at the mouth of the Detroit river, known as Sec. 8 of the ship channel, please add that vessels, in using the eastern half of this channel, should hug the line of buoys pretty closely, for the western half of the channel has not yet been cleared up, and near the center line there is a large boulder which, at the present stage of water, has only about 17 feet of water over it, and might, under certain conditions, be hit by passing vessels. However, if vessels will keep within 300 feet of the line of buoys they can be sure of a clear channel. Work will be begun this week upon some of the worst obstructions in the Amherstburg reach of the Detroit river, between the Lime-Kiln crossing and the lower end of Bois Blanc island."

Death of Capt. John Rice.

Capt. John Rice of Buffalo, whose death was announced on Wednesday, was widely known throughout the lakes on account of his ability in representing the interests of vessel owners in adjusting losses with insurance companies. His services on surveys were in demand everywhere



on the lakes. It was known that Capt. Rice had met with an accident at his home in Buffalo two weeks ago, but his injuries were not thought to be very serious, and the announcement of his death came upon those who knew him without being expected. In his younger days Capt. Rice was known as a steamboat clerk, but he has been connected with dry dock interests at Buffalo for a great number of years, and was, shortly after he quit sailing, superintendent of the old New York Central line of steamers. He was interested in the steamers Robert Mills, Wyoming and and Florida and was also a large owner in the Mills dry dock. He was a director of the Lake Carriers' Association and always took an active in terest in its affairs.

A Most Unusual Mishap.

The accident to the steamer Argonaut on Lake Michigan on Sunday last was one of the most unusual mishaps ever recorded in connection with steam navigation on the lakes. There was no explosion of either boiler or steam chest as reported in early telegraphic reports of the accident, and yet the four columns of the frame of the steeple compound engine, with which the steamer is fitted, had collapsed, causing a scene of wreck and confusion in the engine room, such as is seldom encountered.

The Argonaut was proceeding up Lake Michigan, loaded, and was being urged along at her best speed. Suddenly there was a crash, followed by a rush of steam which blew out the side and front of the house over the engine. The four columns of the engine frame had broken simultaneously, letting the cylinders topple backward against the combing of the engine space, and the toppling of the cylinders had caused the steam pipe connection at the check valve to break. Thus the immense body of steam so suddenly released rushed in a direction opposite to the point where those nearest the engine were located and not the slightest injury resulted to them. Some of the working parts of the engine were bent but not ruined and the engine can be put in shape for further service, though not without some expense and delay. New frame columns will have to be provided and the working parts subjected to an overhauling. The columns undoubtedly broke as a result of the springing of the frame while the engine was being worked up to its fullest power. The Argonaut is not a new vessel, and the bed timbers upon which the engine rests have probably lost much of their firmness, and the lack of rigidity in the engine under working pressure was largely due to this fact.

Lake Superior Commerce During April.

Although the United States canal at Sault Ste. Marie was open for only twelve days in April, it will be seen by the following statement that 279,174 net tons of freight was moved to and from Lake Superior during that period; and this with the Canadian canal not yet open and without the passage of a single Canadian vessel through the United States canal. Some of the freight items are very large for the short period of twelve days. The wheat movement aggregated 2,092,250 bushels; ore 79,316 net tons; coal, soft, 80,044 net tons; flour 269,000 barrels, and hard coal 2,620 net tons. The full statement follows:

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR FOR THE MONTH OF APRIL, 1896.

EAST BOUND.

Items—Designation.	Amount.
Copper, net tons	3,808
Grain, bushels	577,000
Building stone, net tons	.....
Flour, barrels	269,000
Iron ore, net tons	79,316
Iron pig, net tons	.....
Lumber, M. ft. B.M	504
Silver ore, net tons	.....
Wheat, bushels	2,092,250
Unclassified freight, net tons	518
Passengers, number	22

WEST BOUND.

Items—Designation.	Amount.
Coal, hard, net tons	2,620
Coal, soft, net tons	80,044
Flour, barrels	12
Grain, bushels	1,109
Manufactured Iron, net tons	500
Salt, barrels	11,520
Unclassified freight, net tons	9,082
Passengers	41
East bound freight, net tons	185,178
West bound freight, net tons	93,996
Total	279,174
Total number of vessel passages	426
Total registered tonnage	458,047

Around the Lakes.

Shipments of hard coal out of Buffalo during the week ending Saturday night aggregated 33,785 tons.

On her first trip from Ashland the new steamer L. C. Waldo carried 3,131 gross tons of ore. She was not, however, loaded to even the full canal draft.

W. H. Singer of Duluth has bought another harbor tug, the D. T. Helm, which was owned by the Vessel Owners' Towing Co. of Chicago. The price reported is $5,100.

Officials of the Baltimore & Ohio Ry. have a dredge at work at their Sandusky docks and announce that they will in a very short time have 17 feet of water at both coal and ore docks.

The 150-pocket extension of the Duluth & Winnipeg ore dock at Superior was finished last week, giving a dock capacity there of about 35,000. tons. The dock is modern in every respect and the addition has cost about $200,000.

Richard O'Brien, who recently retired from the service of the Pennsylvania company at Erie, was in charge of docks at that point for a great number of years, and was one of the most courteous and obliging of the railway officials at Lake Erie ports.

It was expected that the new side-wheel steamer City of Buffalo would be given a trial to-day (Thursday) on the Detroit river. Mr. Fletcher of New York, representing the builders of the steamer's beam engines is in Detroit to witness the trial.

By actual figures, the Buffalo elevators took out of vessels during the week that ended Saturday morning, May 2, 8,200,000 bushels of grain, which is said to be the largest quantity elevated at that or any other port during any one week in the history of the great lakes.

The Portage lake canals now afford almost a foot more water than will be found in the St. Mary's Falls canal at any time this season. As a result of recent dredging there is now a 15-foot channel from Portage entry through Portage lake and the canal to Lake Superior.

MARINE REVIEW

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,-642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels	1,755	857,735.00
Sailing vessels	1,100	300,642.00
Unrigged	487	83,082.00
Total	3,342	1,241,459.00

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
Year ending June 30, 1891	204	111,856.45
" " " 1892	169	45,168.98
" " " 1893	175	99,271.24
" " " 1894	106	41,984.61
" " " 1895	93	36,353.00
Total	747	334,634.28

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895.*	1894.	1893.	1895.	1894.	1893.
No. vessel pass'ges	17,956	14,491	12,008	3,434	3,352	3,341
T'n'ge, net registd	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of Navigat'n	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about ½ per cent. of the whole, but largely in American vessels.

IT HAS BEEN learned that there was no thought at any time since his recall to this country of assigning Col. Wm. Ludlow to succeed the late Gen. Poe in charge of river improvements on the lakes. His duties in New York harbor had been fixed by the chief of army engineers before his arrival. Col. Ludlow is still retained in Washington on account of the consideration of the Nicaragua canal question by the house commerce committee. The advocates before the committee, represented principally by Messrs. Warner Miller and Menocal, certainly made a mistake in attempting to break down the force of the report of the Nicaragua commission by maligning publicly the individual members and seeking to travesty their doings at the isthmus. Under such circumstances the members of the commission were, of course, prompted to take a course that did not help the canal project. The examination before the committee will doubtless be completed in a few days.

Col. Ludlow's statements before the house committee have brought him into prominence on this great canal question, and his testimony has been of the highest importance. It will certainly tend to delay any act of the government giving support to the canal. The whole trend of his testimony indicated that the project of constructing a Nicaraguan canal will bear further investigation before the government is committed to it. He has said, in substance, that it will not do to embark on the undertaking without more definite information than the commisssion of engineers has thus far been able to gather. Touching on the question of cost, he said that he did not think the canal could be built for $125,000,-000. The board of engineers had made a provisional estimate of $134,-000,000 to cover the cost of construction, but he now wished that they had fixed it at $150,000,000. For that sum, he thought, a canal might be constructed which would be safe and commodious and sufficient for commercial purposes. Before he could speak accurately, however, some hydraulic data must first be procured. He thought there were better ways of building the canal than those formulated by the company, some of which he regarded as impracticable. He could not say how long it would take to build the canal. He would approximate the time between seven and ten years. A great part of the national interest in the canal was, Colonel Ludlow said, on the supposition that it would allow our great war vessels to pass from ocean to ocean. Since the report of the commission was made it was learned that this was not the case. The canal was, in short, a more gigantic undertaking than the commission had supposed, and he would suggest a further investigation of the project before the government should be committed to it. He was in favor of getting a canal through, but wanted to do it right. A thorough examination of the route could, he said, be made within two years.

SOME OF THE details of the recent successful fight of the lake vessel owners against the Detroit river bridge are not known even to executive officers of the Lake Carriers' Association. It probably seemed strange, after all that had been said in the newspapers about the bridge bill being certain of passage in the senate, and after President Brown and Secretary Keep of the Lake Carriers' Association had given up hope of defeating it in that body, to find that in the end Senator McMillan, who had the bill in charge, did not attempt to bring it up in the senate. The secret of the whole matter was that at the last moment Senator Burrows, Mr. McMillan's colleague from Michigan, had been won over to active opposition to the bill by Harvey D. Goulder, counsel for the Lake Carriers' Association. Above all other men in the Senate, Mr. Burrows was the man to oppose the bridge bill. The single fact that he had begun preparations for a speech in opposition to the measure was enough to silence it. Adverse opinions from the two Michigan senators was most to be desired by the vessel owners. Senator Burrows, representing the state of Michigan, opposed to Senator McMillan, acting for the city of Detroit, was the condition in the senate which the represntatives of the vessel interests sought to bring about. It would mean defeat for the bill, and the advocates of the bridge were shrewd enough to recognize the disadvantage of such a condition. Altogether the bridge fight in the present congress has been the hardest struggle ever undertaken by the vessel owners of the lakes, but a repetition of it may be expected as long as the Lake Carriers' Association exists, and especially while Harvey D. Goulder is retained as its counsel. The compensation received by Mr. Goulder would hardly pay for one week of time removed from his valuable law practice, and yet he spent practically the entire winter on this work. To him the bridge question has been one of pride in defending an interest with which he has been associated all his life.

THE announcement that Col. Lydecker of the army engineer corps, already stationed at Detroit, has been assigned temporarily, and in addition to his present duties, to conduct the river and harbor works that were under the direction of the late Gen. Poe, will not, to say the least, be received very favorably by the shipping interests of the lakes. It may be that the 20-foot channel work and the construction of the new lock at the Sault will go along all right under the direction of officials temporarily in charge, but it can hardly be claimed that an officer in any service, whose duties are confined to a period of a few weeks or months, can be expected to exercise the authority that would attend a fixed appointment. The war department has already been criticised on account of the rapidity with which a big canal was built on the Canadian side of the Sault, and if completion of the big works that were under the direction of Gen. Poe is delayed beyond the opening of another season of navigation, the vessel interests can not be blamed for entering serious complaint on account of such delay.

SENATOR BLANCHARD'S amendment to the river and harbor bill making it a misdemeanor to discharge or deposit mud, cinder, ballast or other matter in the waters of any harbor or navigable channel for the improvement of which money has been appropriated by congress, will undoubtedly be made a part of the law, and will, of course, apply to all dredged channels on the lakes. If this law is enforced in cases where vessels jettison parts of their iron ore cargoes on the lakes, it will tend to overcome the trouble that has often been encountered on account of shallow spots in new channels that were caused by ore being thrown overboard.

BARRING serious accident, it is quite probable that the aggregate of freight moved by the new Mutual line steamer Coralia during the present season of navigation will be greater than that ever moved by a ship in any part of the world during a like period. Every effort will be made to unload this steamer in a day at Ashtabula and her loading time at the Escanaba ore docks will, of course, be only a few hours. With even a slight increase in water her cargoes will be made to average 5,000 net tons.

Considerable improvement is noted in Niagara river water this season. Navigation of the river was opened on April 30 by the steamer Robert Holland and consort Sophia Minch, carrying iron ore for the Tonawanda Iron & Steel Co. They went down the river while it was running full of heavy ice, and before the channel buoys had been placed. The Holland drew 12 feet 4 inches and the Minch 12 feet 8 inches.

Abuse of Power in Iron Combinations.

The tendency in all recent combinations in the iron industry has been in the direction of adopting vigorous measures designed to tie down the individual members rigidly to a plan which shall give the organization complete power over the industry with which it deals. The great danger of such a system is the temptation to abuse that power. Its very strength encourages the establishmtnt of fresh competitors who start deliberately to force the associated producers into buying them off. It brirgs into the industry an element which has been foreign to it. On the whole, those who have entered the different branches of the iron trade have gone into it as a life work, their ambition being to leave to their successors a prosperous manufacturing enterprise. There are in the trade very few concerns which have anything to do with stock jobbing. Practically, there has been no element which has rushed into the iron trade with the deliberate purpose of selling out to the public, or of blackmailing rival makers. An abuse of power invites this class of competitors and leads to ultimate disintegration of the associations formed, leaving the industry in a state of almost hopeless collapse from which only years of suffering to all can drag it. Those who look beyond the immediate future, with its extravagant gains, and count the cost of the subsequent demoralization, must use their efforts to prevent that dangerous abuse of power which finds its most ardent supporters in the weakest members of every pool.—Iron Age.

Baltimore's Submarine Boat.

A company has been organized in Baltimore to build a submarine boat of a type invented by Simon Lake. The corporation is to be known as the Lake Submarine Co., and if the efforts of its promoters to obtain money for the enterprise are successful the boat will very probably be built by the Columbian IronWorks of Baltimore. The design has special reference to a vessel for raising wreckage and also for discovering coral sponage and other valuable submarine deposits. The boat will be cigar-shaped and of steel. It will be propelled by steam on the surface and by electricity from storage batteries under the surface. According to the plans, it will be possible to work it at a depth of 150 feet. The trial vessel will be about 40 feet long and 10 or 15 feet in diameter. It is to be made small in order to be transported easily to Europe on a steamer after a trial in the port of Baltimore. It will carry a crew of six men, and will be capable of staying on the bottom forty hours without renewing the air. These details represent, of course, the expectations of enthusiasts who are connected with the new company. The openings, where the divers will go out to work, will be on the bottom, and the water will be kept out of the apartment by which they will leave the boat by air pressure. Powerful electric lights will illuminate the ocean bed 300 feet around the vessel. An ordinary propeller will be located aft, but when the boat strikes bottom it will run on three wheels, two of which will be provided with claws, so they may be used as additional propellers. The operator will be located in the bow, behind the electric lights. The relative air and water pressure will be shown by guages. A derrick fastened in the bow will be used in lifting wreckage.

Detroit River Mail Service.

Postmaster John J. Enright of Detroit says, in a letter to the REVIEW, that although no marked changes have been made this season in the marine service on the river, the Detroit office is constantly on the look-out for anything that may improve the service. "Within a few days," he says, "our marine post office will be supplied with a telephone and all the advantages accruing from its use will, of course, be applied for the betterment of the service. There is one suggestion I would like to make to you in order that your readers may profit by it and save our men considerable annoyance, and the addressees as well, if the suggestion is followed. It would be well for the public in addressing mail matter to go through the service to prepay it in full, so there will be no postage to collect upon delivery by the carrier. Again there are a large number of the patrons of this service who fail to state the name of the vessel in connection with the address, and very many letters fail of delivery through the absence of this important part of the address."

Here is a splendid opportunity of visiting the west. The Nickel Plate road has authorized low excursion rates to Ottawa, Kansas, on May 17, 21 and 22 for the annual convention of the Dunkards, which convenes at Ottawa on May 26. Tickets may be extended thirty days from date of issue by depositing them with the joint agent at Ottawa. The uniform courtesy of employes, the best of roadbeds, and the splendid modern equipment of this line has made it the popular low rate line for all points west.
74-May 21

The new yacht for the emperor of Russia is a boat of 5,200 tons displacement. Her length is 370 feet, breadth 50 feet 6 inches and depth 33 feet 6 inches. She has been fitted with engines of 10,600 horse power, and is valued at $2,300,000.

Story of a Break-down.

The Engineer's Gazette, one of the leading marine publications of London, has been offering prizes for accounts of break-downs at sea and has received quite a number of stories of this kind. The engineer of a freight steamer belonging to one of the large lines trading between New York and Liverpool tells this story of a broken crank shaft:

"We left New York for home early in December, and as the ship had a quick passage all hands were grieving, because it was feared we would get away again and would not be allowed to spend Christmas at home. But the unexpected happened. It was the sixth morning out, and the weather was moderating from a strong easterly gale and heavy head sea, when at 4 a.m., as the second engineer was coming down the ladder to relieve the third engineer, there was a sudden bang and a crash, followed by sparks like a display of fire works from the after crank pit. Of course the first thing was to bring the links to the centre, and shut off the steam. An examination revealed the fact that the shaft (a solid one) had broken square across the after web, right down on top of the bearing neck, and it had been grinding the web round the almost square portion of the shaft end; at least it would be nearly square when it broke, but by the time the engines were stopped forty or fifty revolutions had been made, and the shaft end was more round than square. The after crank shaft was at once disconnected ready for lifting out. The mates and their men set to work moving cargo, etc., so as to get out the spare shaft from the after 'tween decks. The spare shaft was an old one that had been taken out a year previously on account of having a flaw in the pin, and had had a bolt put through it. There is no need to describe the details connected with getting out coupling bolts, etc.; they were tapered ones, and very fast indeed. They were got out, and the shaft was ready for lifting by 6 p. m. It was then decided to leave the job of lifting until 2 a. m., as the ship was rolling and tumbling heavily. At 2 a m. all hands turned to again, although the vessel was still rolling heavily. Blocks and tackles were got on to the shaft wherever possible, and every precaution taken. The lifting falls were led through the skylight to after winch, and after about an hour's anxious work it was landed and safely lashed to the ship's side. Getting the other one down was the next job, but fortunately there was a plate in the engine room top that had been taken off to pass the new crank shaft through previously, and it had only been bolted up. The spare shaft was got down in place all right, and the worst appeared to be over, when it was found that when the shaft had been last fitted the coupling bolt holes had been tapered the other way, so now we had all the eight coupling bolt holes with both the smaller diameters together. All that could be done under the circumstances was to put half in each way. The engines were then started ahead, after being stopped 49½ hours, and ran at 20 revolutions for six hours, and then stopped for eight hours to tighten up as well as to replace some four bolts that had broken in the coupling; at the same time the turning wheel was taken off the fore end of the shaft, and keyed half on each coupling so as to help the coupling bolts. The engines were then started ahead at about twenty-five revolutions for twelve hours, then increased to thirty, twenty-four hours later to thirty-three and forty-eight hours later to forty. For six days the engines worked at the latter speed, but we were finally enabled to increase the speed to sixty revolutions and reached home in safety."

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes on May 2, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago	15,817,000	5,725,000
Duluth	11,911,000	95,000
Milwaukee	846,000	2,000
Detroit	261,000	21,000
Toledo	629,000	193,000
Buffalo	1,209,000	894,000
Total	30,673,000	6,930,000

As compared with a week ago, the above figures show at the several points named a decrease of 2,740,000 bushels of wheat and 465,000 bushels of corn.

Another boom in ship building is reported from the Clyde. One of the largest of the Japanese shipping companies has ordered six steamers from Clyde and Belfast builders. The vessels are intended to form a line between Japanese ports and Europe. Contracts call for their completion by the end of the year.

The last trial of the British topedo destroyer Desperate of six runs on the Maplin mile showed a mean speed of 30.46 knots, or thirty-five miles an hour, with 5,600 horse power, 210 pounds pressure, 24 inches vacuum, 406 revolutions, and the standard load on board. Thus one vessel after another of this type makes a new speed record.

A Little More than a Mill Per Ton Per Mile.

LAKE SUPERIOR COMMERCE DISCUSSED IN CANAL REPORTS—MILE-TON STATISTICS FROM THE CANAL OFFICIALS.

In 1894 the cost per mile per ton of moving freight that passed through the St. Mary's Falls canal was ninety-nine hundreths of a mill. The mile-ton report of the canal for 1895 has just been completed under direction of the war department officials in charge of the canal, and it has been found that the mile-ton cost of moving freight last year was $1\frac{14}{100}$ mills. This increase is due to the higher freight rates that prevailed in 1895. As usual, this report, which is a discussion of the canal statistics, is very interesting. Although it has not as yet been submitted to congress, the secretary of war granted permission to make it public, and a copy has been received by the REVIEW through the courtesy of the canal officials.

From the column of largest cargoes it is ascertained that there were 101 propellers that carried in their largest load 2,000 tons and upward; that these 101 cargoes aggregated 223,611 tons, and averaged 2,263 tons. There were thirty-eight propellers that carried in their largest load 2,500 tons and upwards, aggregating 100,360 tons, and averaging 2,641 tons; and ten propellers that carried in their largest load 3,000 tons and upwards, aggregating 32,408 tons, and averaging 3,241 tons. There were four propellers that carried in their largest load 3,500 tons and upwards, aggregating 14,763 tons, and averaging 3,691 tons. There were three propellers that carried in their largest load 4,000 tons and upwards, aggregating 12,666 tons, and averaging 4,222 tons. There were twenty-one sail vessels that carried 2,000 tons and upwards, aggregating 45,622 tons, and averaging 2,172 tons; sixteen sail vessels that carried 2,500 tons and upwards, aggregating 43,486 tons, and averaging 2,718 tons; four sail vessels that carried 3,000 tons and upwards, aggregating 13,120 tons, and averaging 3,280 tons; and one vessel that carried 4,000 tons and upwards.

TABLE SHOWING ESTIMATED VALUE OF FREIGHT THROUGH UNITED STATES AND CANADIAN CANALS AT SAULT STE. MARIE DURING THE SEASON OF 1895.

ITEMS.	Quantity.	Price per unit.	Valuation.
Coal, hard, net tons	440,477	$ 4 25	$ 1,872,027.25
Coal, soft, net tons	2,133,885	2 40	5,121,324.00
Flour, barrels	8,902,302	3 75	33,383,632.50
Wheat, bushels	46,218,250	65	30,041,862.50
Grain other than wheat, bushels	8,328,694	30	4,164,347.00
Manufactured iron, net tons	73,663	50 00	3,683,150.00
Pig iron, net tons	26,676	13 00	346,788.00
Salt, barrels	269,919	75	202,439.25
Copper, net tons	107,452	200 00	21,490,400.00
Iron ore, net tons	8,062,209	2 77	22,332,318.93
Lumber, M ft., B. M	740,700	12 00	8,888,400.00
Silver ore and bullion, net tons	100	112 00	11,200.00
Building stone	23,876	10 00	238,760.00
Unclassified freight, net tons	463,308	60 00	27,798,480.00
	.....	.....	$159,575,129.43

Average value per ton of freight, $10.60.

The relative values of the different commodities are as follows: Coal, 4 per cent.; cereals, 42 per cent.; iron, 17 per cent.; copper, 14 per cent.; lumber, 6 per cent.; all other products, 17 per cent. In the foregoing percentages both hard and soft coal are included under the head of "coal" wheat, flour, and grain other than wheat, under the head of "cereals," and iron ore, manufactured iron and pig iron, under the head of "iron." It will be observed that the cereals are far the most important products, being 42 per cent. of the whole. The value of the freight commodities for 1895 has been fully amended from information obtained by correspondence with interested manufacturers, producers and dealers, and from reliable published price currents. The valuations on the articles are at their lake ports of destination.

MILE-TONS, SEASON OF 1896.—COST OF CARRYING FREIGHT TRANSPORTED THROUGH UNITED STATES AND CANADIAN CANALS AT SAULT STE. MARIE.

ITEMS.	Quantity.	Price per unit.	Amount.
Coal, net tons	2,574,362	37	$ 952,513 94
Flour, barrels	8,902,302	14	1,246,322.28
Wheat, bushels	46,218,250	4 4-10	2,033,603.00
Grain other than wheat, bushels	8,328,694	4 5-10	374,791.23
Manufactured iron, net tons	73,663	1 50	110,494.50
Pig iron, net tons	26,674	1 05	28,007.70
Salt, barrels	269,919	13	35,089.47
Copper, net tons	107,452	1 66	178,370.32
Iron Ore, net tons	8,062,209	82	6,611,011.38
Lumber, M. ft. B. M	740,700	2 00	1,481,400.00
Silver Ore and bullion, net tons	100	2 33	233.00
Building stone, net tons	23,876	1 20	28,651.20
Miscellaneous merchandise, net tons	463,308	2 50	1,158,270.00
	.....	.....	$14,238,758.02

In all cases "tons" mean "net tons" of 2,000 pounds. The total amount of freight paid, $14,238,758.02, which, divided by the total mile-tons 12,502,548,892, gives the cost per mile per ton, as 1 and $\frac{14}{100}$ mills. The average distance freight was carried was 830 miles, which is two miles more than in 1894. The average distance freight was carried in 1895 was 830 miles; in 1894, 828.1 miles; in 1893, 831.9 miles. The nature of the data from which the preceding results were found is such that it includes the cost of loading and unloading. Other results were obtained as follows:

Total mile tons	12,502,548,892
Total freight paid	$14,238,758.02
Cost per mile per ton	$1\frac{14}{100}$ mills
Average distance freight was carried	830 miles
Average cost per ton for carrying freight	94½ cents

The total number of registered craft which used the canals during the season was 877, of which 819 were American and 58 Canadian. The total freight carried by American unregistered craft amounted to 5,655 tons in 139 passages, making an average of about 40 tons of freight per passage. The freight carried by Canadian unregistered craft amounted to 10,780 tons, in ninety-three passages, making an average of about 116 tons of freight per passage.

SUMMARY.

Total number of registered craft	877
Total passages by unregistered craft	232
Total freight carried by registered craft	15,046,145
Total freight carried by unregistered craft	16,435
Total passengers	31,656
Total valuation of crafts registered	$42,895,800

The Canadian freight amounted to 566,251 tons, which is 3¾ per cent. of the total freight of the season.

The total passages for the season amounted to 17,956, and 1,775 of these were by seventy-one crafts under 100 tons register; their aggregate registered tonnage was 1,915, their average tonnage 27, tons, and the freight carried by these crafts during the season amounted to only 72 tons.

The greatest number of miles run during the season is to the credit of the propeller Masaba, of the Minnesota Steamship Co.'s fleet, of Cleveland, and amounted to 45,481 miles. The greatest amount of freight carried by a single vessel during the season is to the credit of the propeller Mariposa, of the same line, aggregating 90,703 net tons. The greatest number of mile-tons for the season is to the credit of the propeller Maritana, of the same line, and is 75,287,054. The largest single cargo carried by a propeller during the season is to the credit of the Penobscot, owned by Eddy Bros. of Bay City, Mich., and amounted to 4,294 net tons. The largest single cargo carried by a sail vessel is to the credit of the tow barge Aurania, owned by John Corrigan of Cleveland, amounting to 4, 392 net tons.

The United States canal was open to navigation during the season of 1895, 231 days, and the Canadian canal eighty-seven days. The amount of freight carried to and from Lake Superior during the season 1895, was 15,062,580 net tons, which is an increase of 1,866,720 net tons, or 14 per cent. in comparison with the season of 1894.

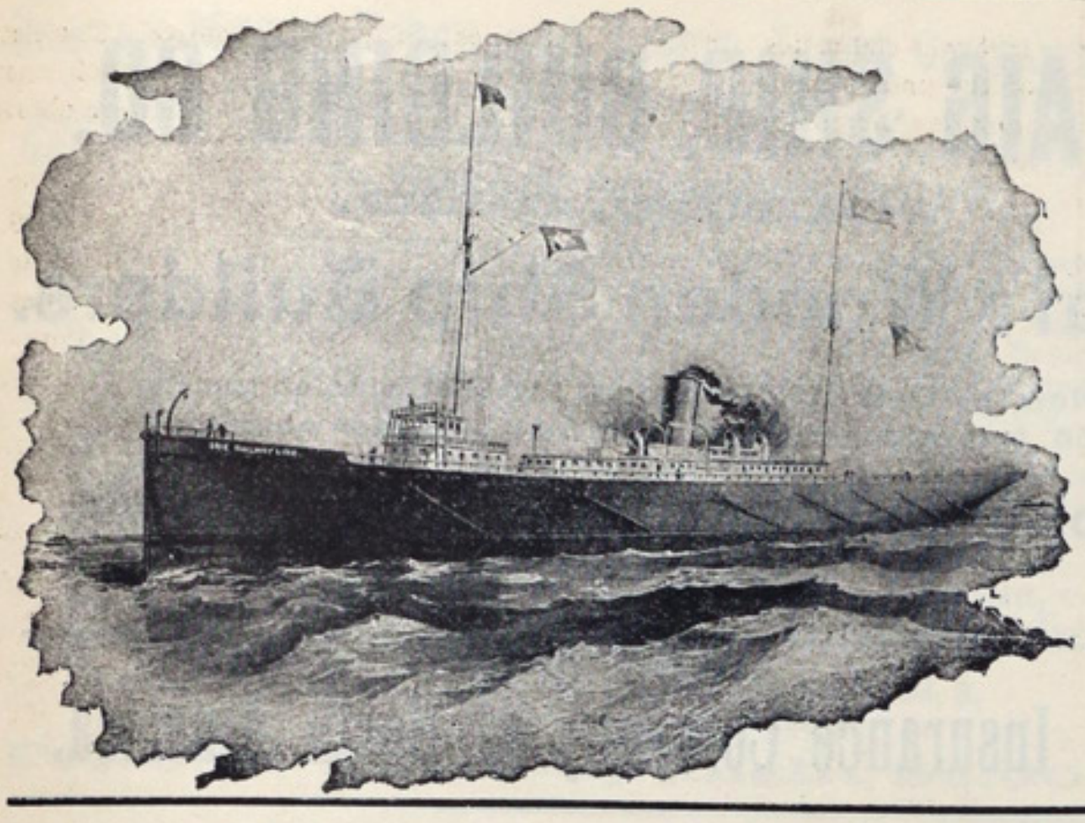
No reduction in the rates will be made just now by railways carrying ore from Ohio ports to the several furnace districts, but a marked reduction must be made later on as a result of the Carnegie company becoming interested in the Pittsburg, Shenango and Lake Erie Ry. and the docks at Conneaut. When the Conneaut railway is extended into Pittsburg and the Carnegie company begins to reap the advantages of its new arrangements, the other ore railways must reduce their rate in justice to competitors of the Carnegie company.

The boiler of the steamer Iron Age, which gave out under test at Buffalo recently, is now at the boiler shop of the Dry Dock Engine Works, Detroit, and has been viewed with interest by a large number of marine men. The break extends the entire length of boiler, about 12 feet, and through the lower part of the front end up to the underside of the centre furnace. It is not probable that any use will be made of the old boiler at present, as it is understood that a new one will be built for the Iron Age as rapidly as possible.

Through the efforts of Congressman Burton, the light-house board has granted the Lake Carriers' Association permission to go ahead with the lighting of the new Grosse point cut, and it is expected that within a few days this channel will be completely lighted so as to give vessels by night, as well as in the day time, the full advantage of the entire width of the cut, which is 20 feet deep.

Two assistant inspectors of steam vessels are now employed at Milwaukee. They are Thomas W. Swift, assistant inspector of hulls, and D. W. Lanigan, assistant inspector of boilers. Both are said to be very capable men, although the fact that assistant inspectors were to be appointed was kept very quiet and there were few applicants for the place.

It is now quite probable that two 400-foot ships will be launched in Cleveland Saturday. Manager James Wallace of the Cleveland Ship Building Co. is trying to complete arrangements for launching the Wolvin steamer Queen City on that day. All details have been arranged for the launch of the Sir Henry Beseemer at the Globe yard.



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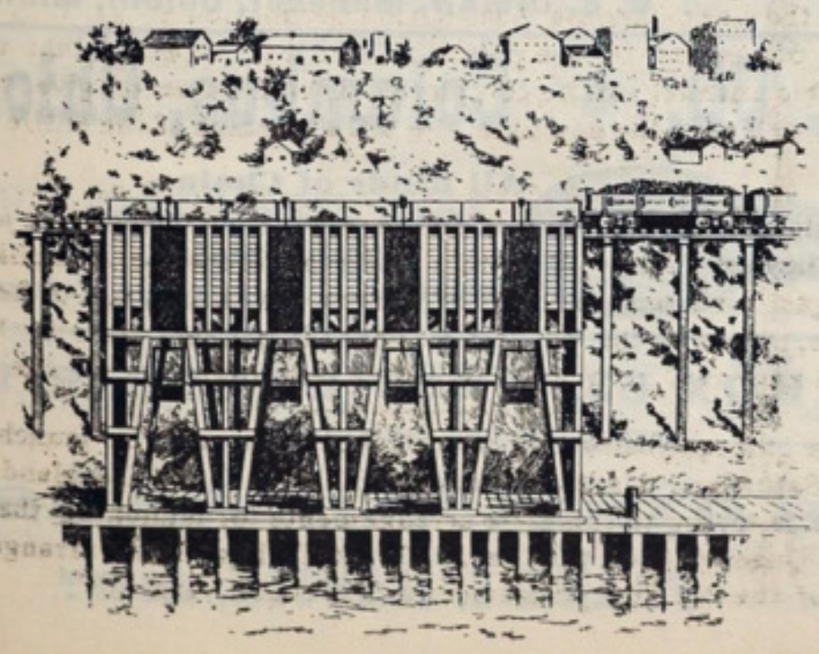

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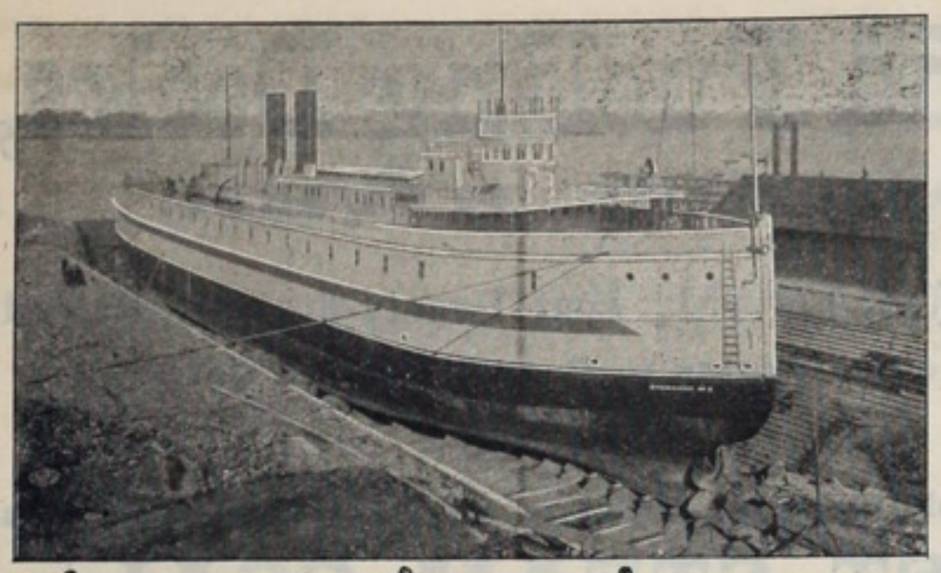

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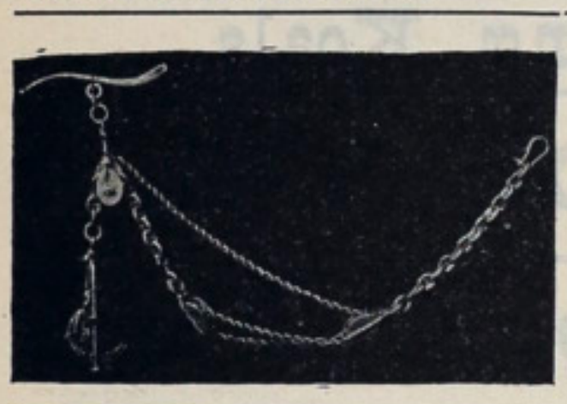

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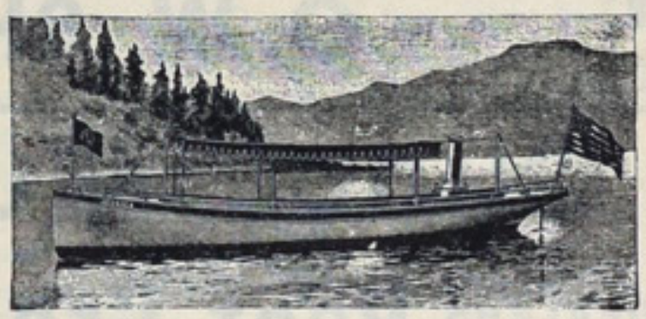

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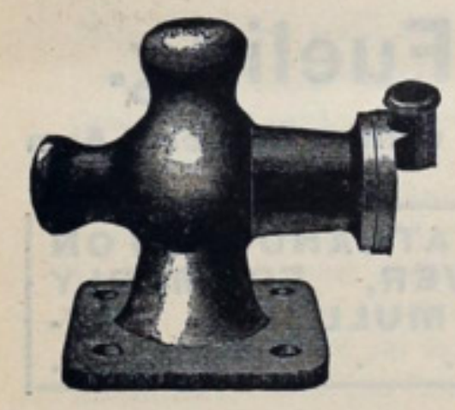

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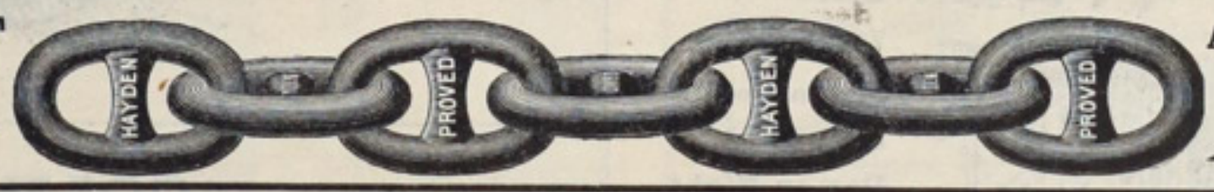

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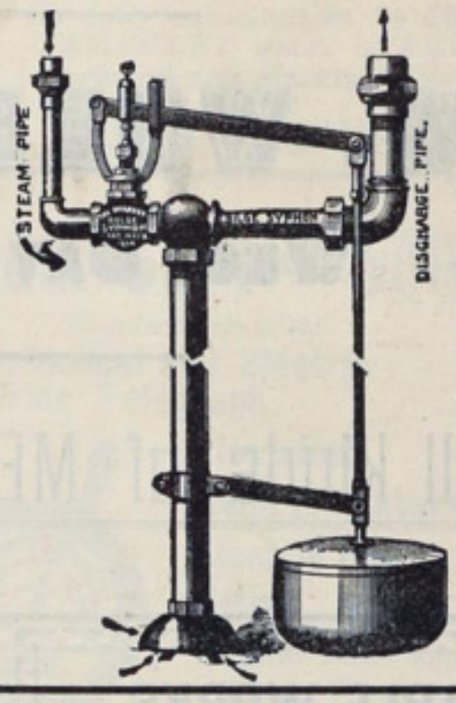

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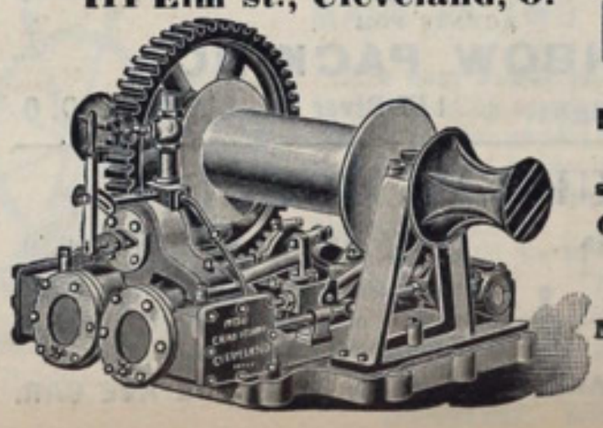

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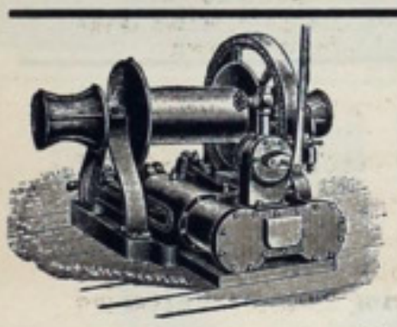

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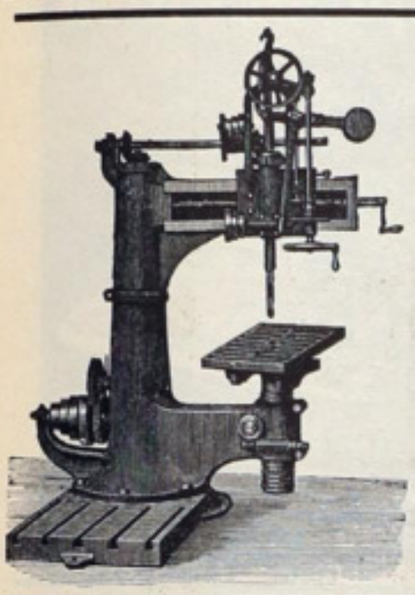

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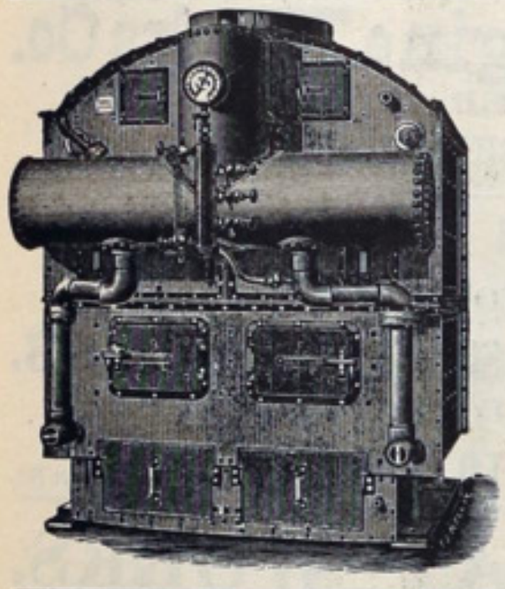

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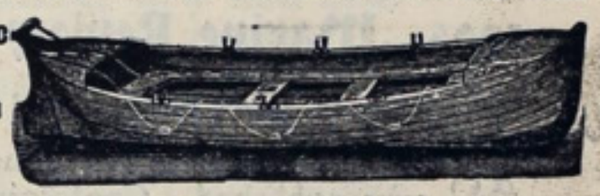

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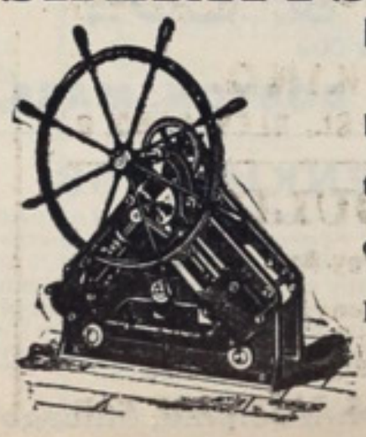

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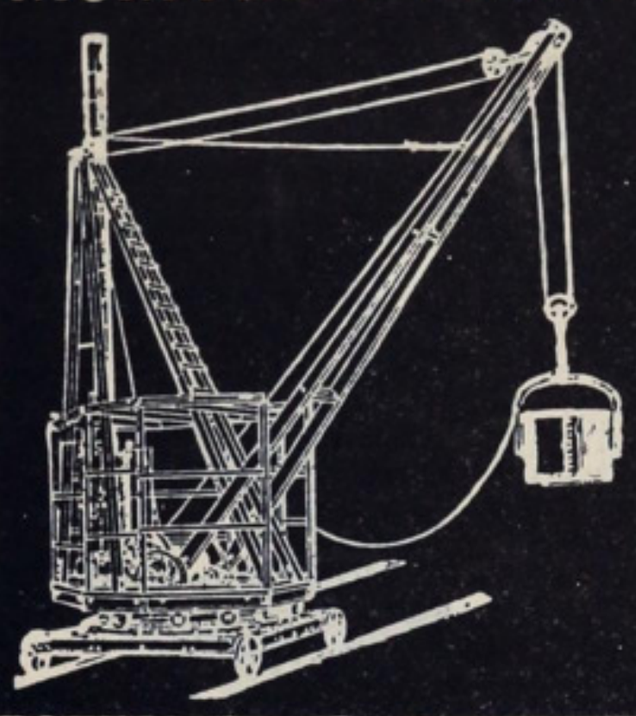

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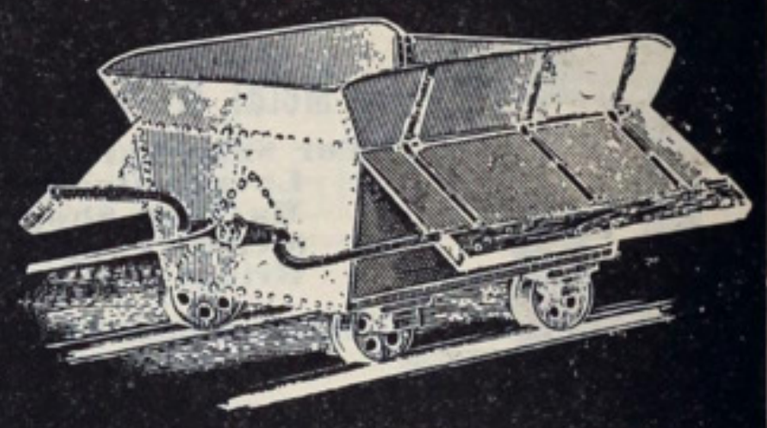

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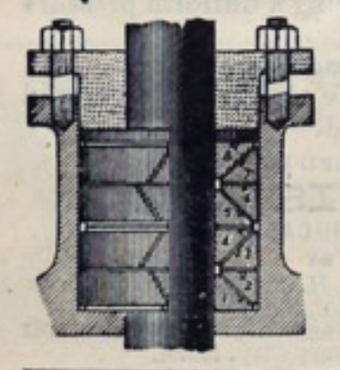

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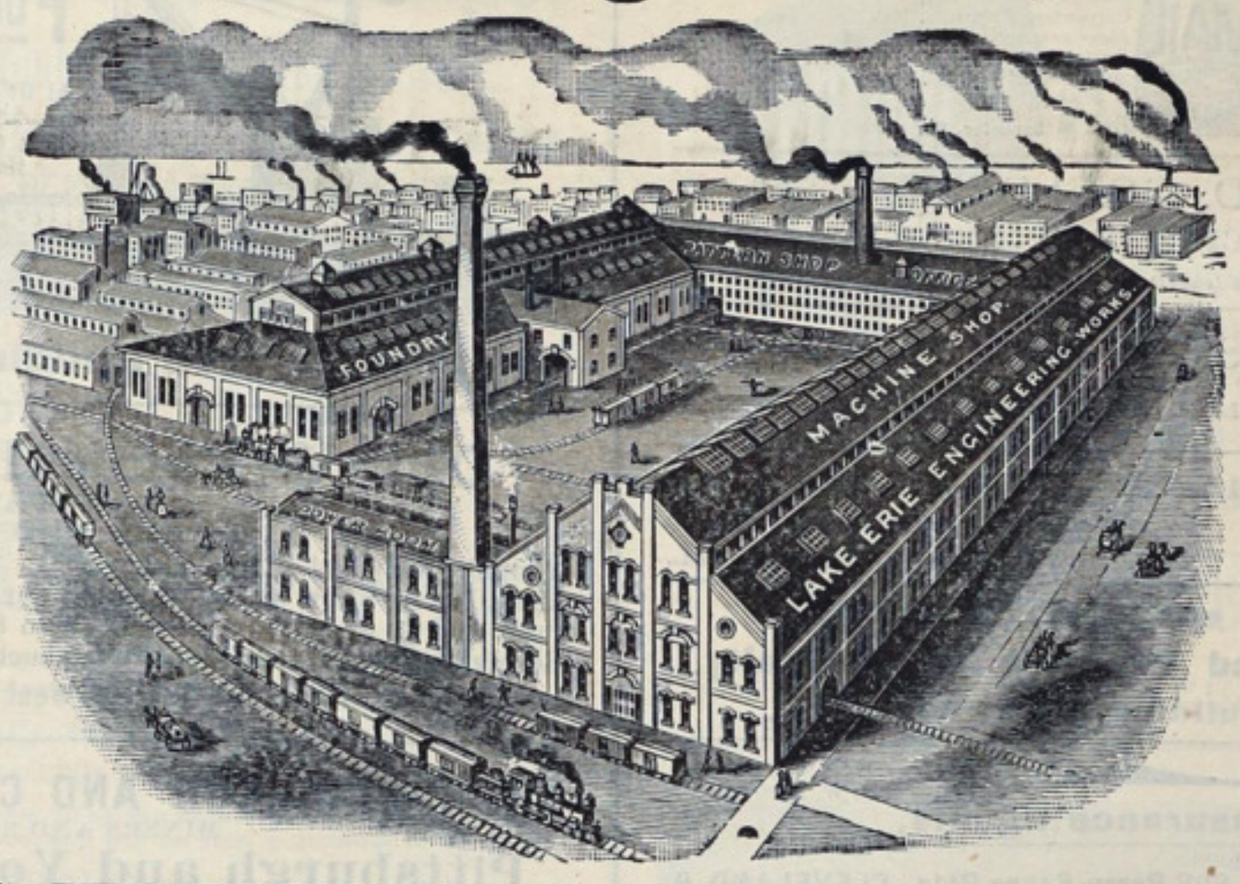

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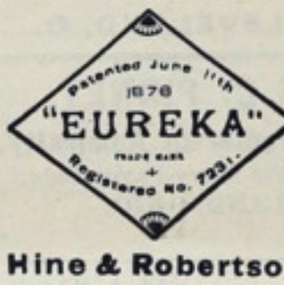

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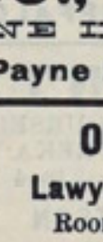

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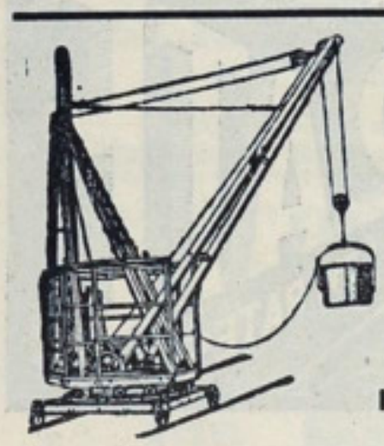

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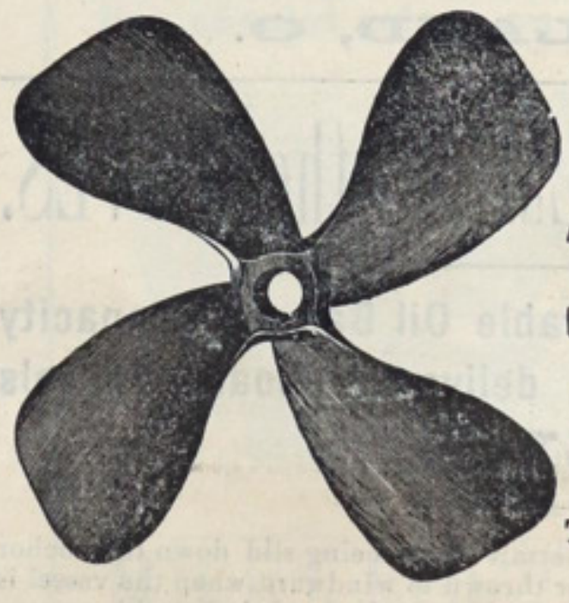

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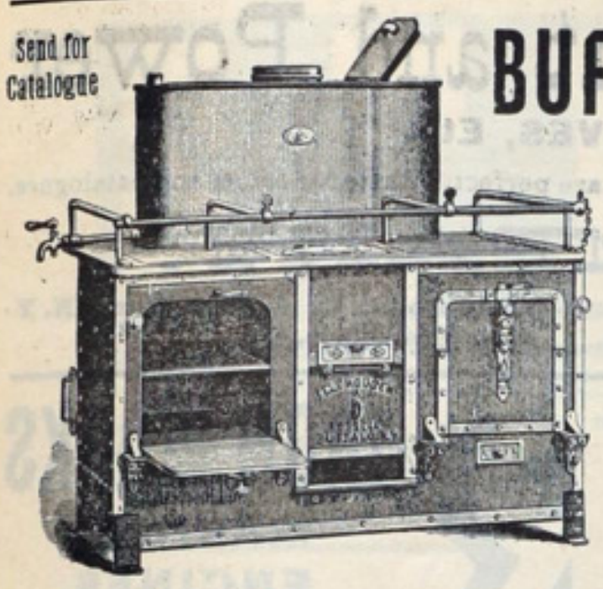

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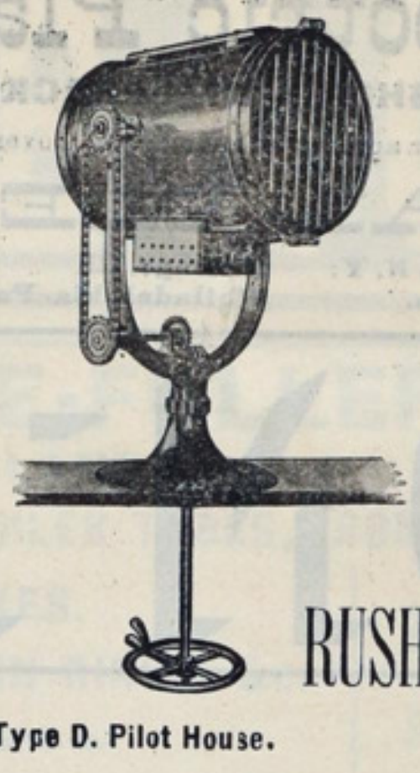

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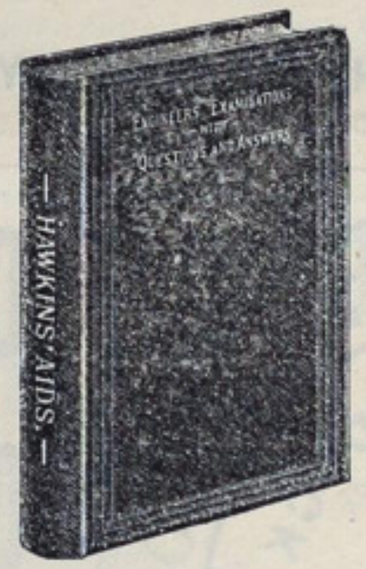

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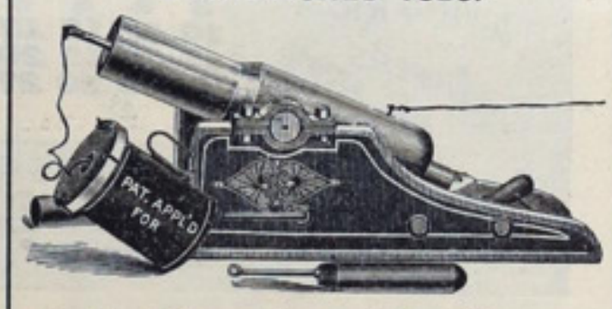

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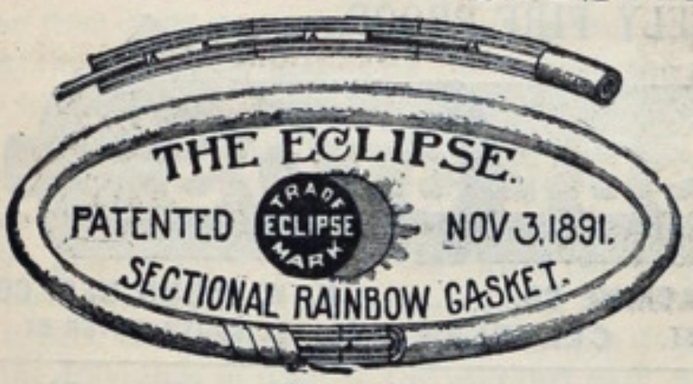

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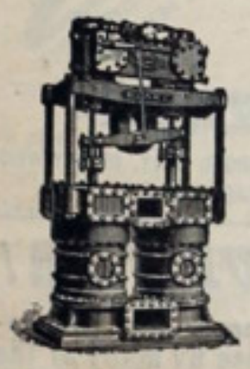

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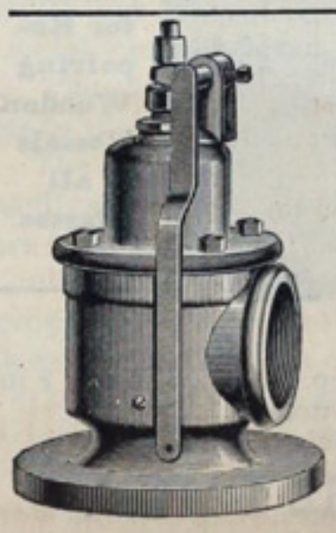

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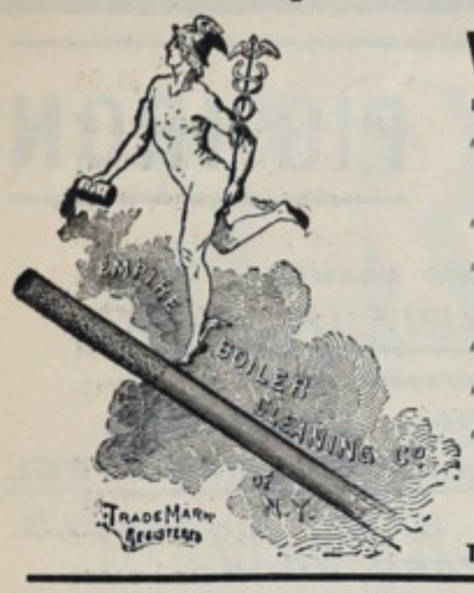

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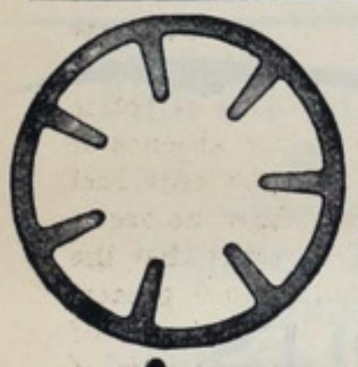

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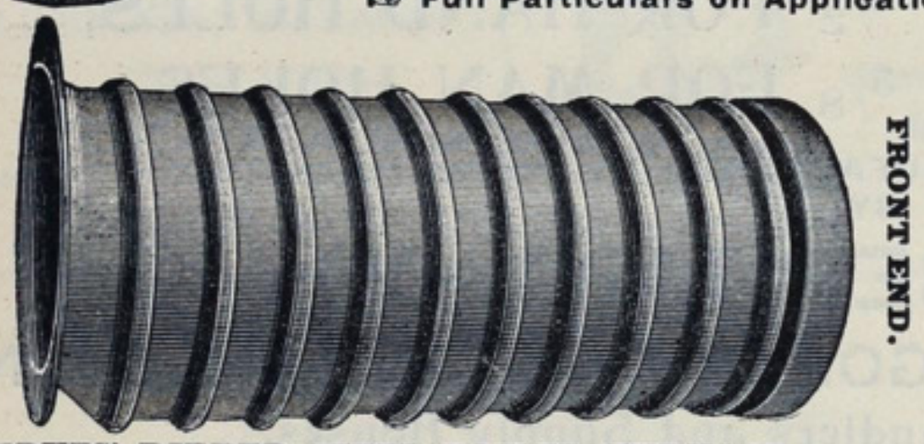

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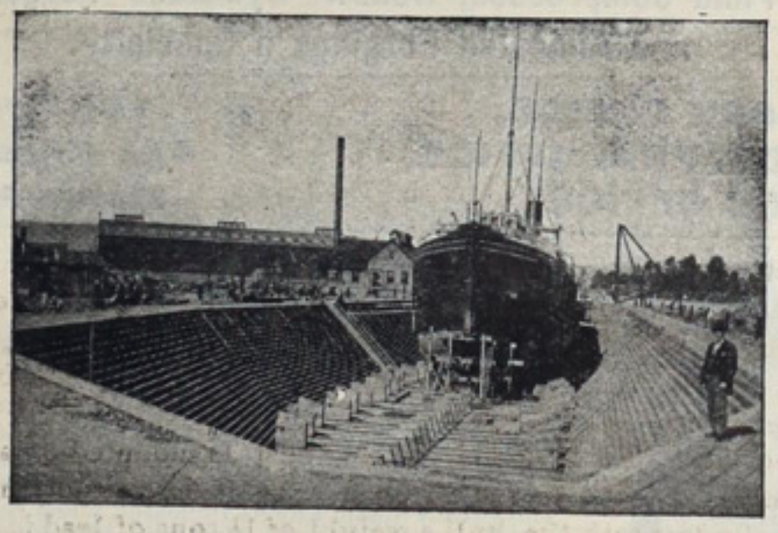

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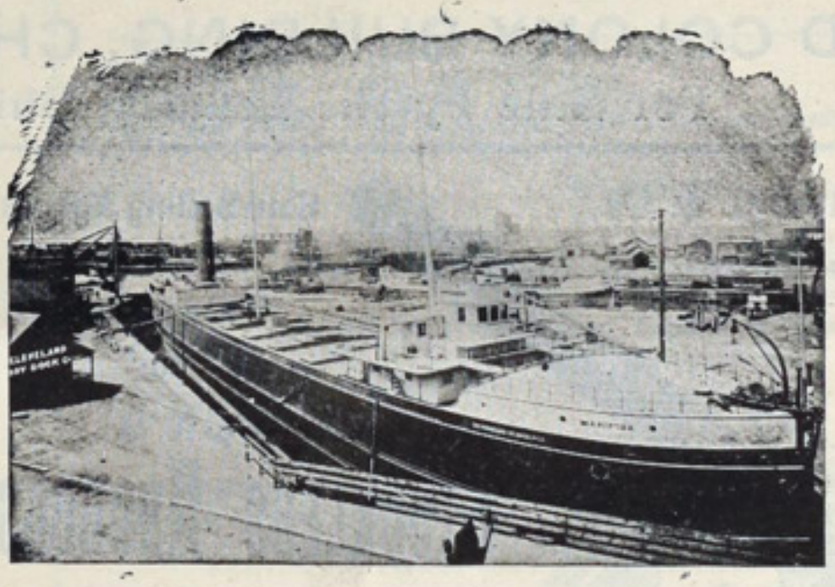

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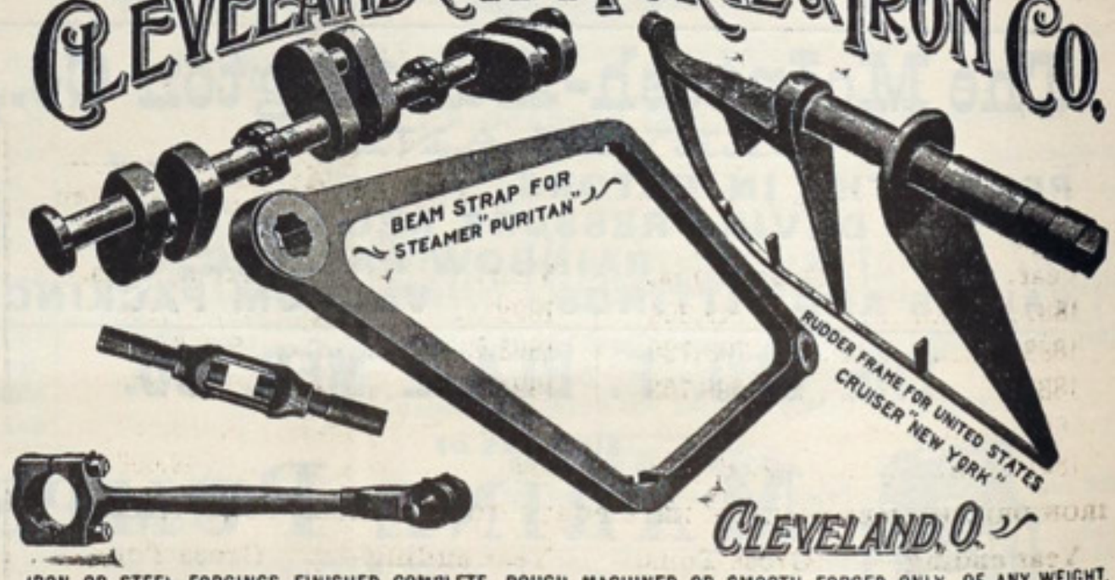

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